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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,471	03/15/2004	Warren M. Ewert	33890US1	3183

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EXAMINER	
MCAVOY, ELLEN M	
ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/800,471	EWERT ET AL.	
	Examiner	Art Unit	
	Ellen M. McAvoy	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6,10-13,15-18,20-31,35-37,39,41-46 and 48-65* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6,10-13,15-18,20-31,35-37,39,41-46 and 48-65* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-6, 10-13, 15-18, 20-31, 35-37, 39, 41-46 and 48-65 are still rejected under 35 U.S.C. 103(a) as being unpatentable over Lashier et al (5,689,028), Araki et al (5,750,816) and Kreischer et al (6,380,451), considered separately.

Applicants' arguments filed 17 February 2009 have been fully considered but they are not persuasive. As previously set forth, Lashier et al ["Lashier"] disclose a process to regulate olefin production by deactivating the catalyst system which comprises the sequential steps of contacting a reactor effluent stream with an alcohol, removing and recovering any desired olefin product(s), adding an aqueous base to the reactor stream effluent, removing a solid product from the reactor stream effluent, separating organic and aqueous phases, adding an acid to the aqueous phase and recovering the precipitate. Lashier teaches that catalyst systems useful in the invention comprises a chromium source, a pyrrole-containing compound and a metal alkyl such as an aluminum alkyl. See column 1. Lashier teaches that the chromium source includes one or more organic or inorganic compounds including halogen-containing compounds. See column 1, line 55 to column 2, line 34. Lashier teaches that the pyrrole-containing compound can be any pyrrole-containing compound that will react with a chromium source to form a chromium pyrrolide complex. See column 2, line 35 to column 3, line 13. Lashier teaches that the

alkylaluminum compounds may also be halogenated. See column 3. Reactants and reaction conditions are set forth in columns 4-5. Lashier teaches that suitable alcohol compounds have six or more carbon atoms and include 1-hexanol, 2-ethyl-hexanol, 1-heptanol, 1-octanol, and others. See column 6. No water content in the alcohol component is disclosed so the examiner is of the position that water-free alcohols are used. The examiner maintains the position that the process of Lashier appears to be indistinguishable from the claimed processes.

Applicants argue that the claims are not attempting to merely claim methods for catalyst system deactivation but are rather directed to processes having steps for deactivating a catalyst system and limiting or inhibiting the decomposition of a deactivated catalyst system. Additionally, applicants argue that the claimed method may be particularly important in decreasing or eliminating the corrosion of equipment resulting from decomposition of the deactivated catalyst system in distillation towers. Applicants argue that the temperature of material passed through a reboiler of a distillation tower relates to olefin oligomerization product isolation, and that the reboiler temperature is a feature of product isolation and not a reaction condition. Applicants argue that the previous office action has failed to present a *prima facie* case of obviousness in relation to the pending independent claims. This is not deemed to be persuasive because Lashier teaches that after the catalyst deactivation, the olefin products can be removed by any removal process, preferably distillation. Further, Lashier teaches that any reaction conditions which can affect the above-mentioned steps are useful, and removal of the olefin product(s) by distillation was an above mentioned step. Reaction conditions are assumed to include temperature and pressure. In considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one

skilled in the art would reasonable be expected to draw therefrom. Although Lashier does not teach the temperature of a reboiler in the separation of the olefin(s) product by distillation, the prior art teaches that any reaction conditions which can affect the above-mentioned steps, including separation of the same product(s) by distillation, can be used. The examiner maintains the position that the skilled artisan would know what reboiler temperatures could reasonably be used to effectively run the olefin(s) separation process by distillation. The examiner maintains the position that since the process of Lashier uses the same catalyst system as the claims, the same method of deactivation of the catalyst system by the same alcohols of the claims, and the same product recovery step of distillation as the claims, the reboiler temperature of less than 190°C most likely was also used since no decomposition of the catalyst system and no corrosion of the process equipment was taught. Further, the examiner maintains the position that the fact that applicants have discovered that at reboiler temperatures higher than 190°C the deactivated catalyst system decomposition begins to increase does NOT result in the patentability of a known process. The examiner maintains the position that where the general conditions of a claim are disclosed in the prior art it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller,* 220 F.2d 454, 456, 105 USPQ 233, 235 CCPA 1955.

As previously set forth, Araki et al ["Araki"] discloses a process for preparing alpha-olefin oligomers using a chromium-based catalyst system comprising (a) a chromium compound, (b) at least one nitrogen-containing compound, and (c) an alkylaluminum compound. Arkai teaches that the process recovers the produced alpha-olefin oligomers, the catalyst components and the by-product polymers from the reaction solution. The prior art teaches that suitable chromium compounds are set forth in column 2, lines 42 et. seq. Suitable nitrogen-containing

compounds include pyrrole and pyrrolide compounds as set forth in column 4. Araki teaches that the alkylaluminum compounds may be halogenated. See column 6. Araki teaches that the oligomerization process in carried out in a solvent and a compound soluble in the solvent and having a bonding ability to the chromium such as an alcohol compound is added to the reaction solution. Suitable alcohols include hexanol, heptanol, and diols. See column 12. Reaction conditions are set forth in columns 8-9. Araki teaches that the reaction effluent stream may then be supplied into a product distillation tower to recover the produced alpha-olefin oligomers as a distillate while concentrating the by-product polymers (i.e., heavies) and catalyst components which are recovered as a bottoms product. See column 2, lines 5-25 and column 9, lines 12-24. Although Araki does not set forth a reboiler distillation temperature of below about 190°C, Araki teaches that any reaction conditions which can affect the above-mentioned steps can be used. See columns 9-14. The examiner maintains the position that the process of Araki appears indistinguishable from the claimed processes.

Applicants argue that the claims are not attempting to merely claim methods for catalyst system deactivation but are rather directed to processes having steps for deactivating a catalyst system and limiting or inhibiting the decomposition of a deactivated catalyst system. Additionally, applicants argue that the claimed method may be particularly important in decreasing or eliminating the corrosion of equipment resulting from decomposition of the deactivated catalyst system in distillation towers. Applicants argue that the temperature of material passed through a reboiler of a distillation tower relates to olefin oligomerization product isolation, and that the reboiler temperature is a feature of product isolation and not a reaction condition. This is not deemed to be persuasive because Araki teaches that after the catalyst

deactivation, the olefin products can be removed by any removal process, preferably distillation. Further, Araki teaches that any reaction conditions which can affect the above-mentioned steps are useful, and removal of the olefin product(s) by distillation was an above mentioned step. Reaction conditions are assumed to include temperature and pressure. In considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonable be expected to draw therefrom. Although Araki does not teach the temperature of a reboiler in the separation of the olefin(s) product by distillation, the prior art teaches that any reaction conditions which can affect the above-mentioned steps, including separation of the same product(s) by distillation, can be used. The examiner maintains the position that the skilled artisan would know what reboiler temperatures could reasonably be used to effectively run the olefin(s) separation process by distillation. The examiner maintains the position that since the process of Araki uses the same catalyst system as the claims, the same method of deactivation of the catalyst system by the same alcohols of the claims, and the same product recovery step of distillation as the claims, the reboiler temperature of less than 190°C most likely was also used since no decomposition of the catalyst system and no corrosion of the process equipment was taught. Further, the examiner maintains the position that the fact that applicants have discovered that at reboiler temperatures higher than 190°C the deactivated catalyst system decomposition begins to increase does NOT result in the patentability of a known process. The examiner maintains the position that where the general conditions of a claim are disclosed in the prior art it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller,* 220 F.2d 454, 456, 105 USPQ 233, 235 CCPA 1955.

As previously set forth, Kreischer et al ["Kreischer"] discloses a process of cleaning an oligomerization reactor after making a higher olefin in the reactor. The oligomerization reaction causes a co-product residue of the catalyst to form on the interior surface of the reactor. Suitable catalyst systems used in such a reaction include the combination of a chromium source, a pyrrole-containing compound and one or metal alkyls such as aluminum alkyl compounds. The interior surface of the reactor is then contacted with an alcohol under conditions effective to remove at least a substantial amount of the catalyst residue from the interior surface of the reactor. Kreischer teaches that the catalyst-removing step can be carried out by combining an alcohol with the process medium used in the reactor. Kreischer set forth reaction conditions in columns 7-9. Suitable alcohols have 6-12 carbon atoms and include 1-hexanol and 1-heptanol. Kreischer teaches that after the catalyst has been deactivated, the olefin product(s) are removed from the reactor effluent stream. Kreischer teaches that any removal process can be used although distillation is preferred for ease of use. See column 9, lines 63 to column 10, line 14. Although Kreischer does not set forth a reboiler distillation temperature of below about 190°C, Kreischer teaches that any reaction conditions which can affect the above-mentioned steps can be used. See columns 10-11. The examiner maintains the position that the process of Kreischer appears to be indistinguishable from the claimed processes.

Applicants argue that the claims are not attempting to merely claim methods for catalyst system deactivation but are rather directed to processes having steps for deactivating a catalyst system and limiting or inhibiting the decomposition of a deactivated catalyst system. Additionally, applicants argue that the claimed method may be particularly important in

decreasing or eliminating the corrosion of equipment resulting from decomposition of the deactivated catalyst system in distillation towers. Applicants argue that the temperature of material passed through a reboiler of a distillation tower relates to olefin oligomerization product isolation, and that the reboiler temperature is a feature of product isolation and not a reaction condition. This is not deemed to be persuasive because Kreischer teaches that after the catalyst deactivation, the olefin products can be removed by any removal process, preferably distillation. Further, Kreischer teaches that any reaction conditions which can affect the above-mentioned steps are useful, and removal of the olefin product(s) by distillation was an above mentioned step. Reaction conditions are assumed to include temperature and pressure. In considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonable be expected to draw therefrom. Although Kreischer does not teach the temperature of a reboiler in the separation of the olefin(s) product by distillation, the prior art teaches that any reaction conditions which can affect the above-mentioned steps, including separation of the same product(s) by distillation, can be used. The examiner maintains the position that the skilled artisan would know what reboiler temperatures could reasonably be used to effectively run the olefin(s) separation process by distillation. The examiner maintains the position that since the process of Kreischer uses the same catalyst system as the claims, the same method of deactivation of the catalyst system by the same alcohols of the claims, and the same product recovery step of distillation as the claims, the reboiler temperature of less than 190°C most likely was also used since no decomposition of the catalyst system and no corrosion of the process equipment was taught. Further, the examiner maintains the position that the fact that applicants

have discovered that at reboiler temperatures higher than 190°C the deactivated catalyst system decomposition begins to increase does NOT result in the patentability of a known process. The examiner maintains the position that where the general conditions of a claim are disclosed in the prior art it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller,* 220 F.2d 454, 456, 105 USPQ 233, 235 CCPA 1955.

THIS ACTION IS MADE FINAL. Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ellen M. McAvoy whose telephone number is (571) 272-1451. The examiner can normally be reached on M-F (7:30-5:00) with alt. Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ellen M McAvoy/
Primary Examiner
Art Unit 1797

EMcAvoy
May 16, 2009